Planning & Design Accommodation for Oversize and Overweight Freight in Work Zones
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Learning Objectives

• Develop understanding of Federal and State roles in oversize and overweight (OS/OW) freight on highways.
• OS/OW permit requirements and relationship to work zone project scheduling and work zone TMP’s.
• Importance of communication and coordination with OS/OW stakeholders on construction projects.
• Mitigation techniques for dealing with OS/OW in work zones.
Oversize & Overweight (OS/OW) Freight Movement Background

- Federal role in truck freight
- State role and responsibilities
- FHWA Work Zone Safety and Mobility regulations
- State issued permits for over-sized loads
Federal Involvement on Truck Freight Routes

- 4.1 million miles of highways & streets in the U.S.
- Federal laws and rules address truck size, length and width, on 200,000 miles of the highest quality highways, which includes 47,000 mile Interstate system. Interstate system also has weight rules.
- Federal rules allow states to impose reasonable restrictions, without FHWA approval, on the National Truck Network, including construction zones.
- 2015 Fixing America's Surface Transportation Act (FAST Act) includes truck route funds and requires state Highway Freight Plans by 2017 (OS/OW not specifically mentioned in Act).
State Responsibility to Ensure Safety & Mobility

All states have laws and regulations setting their own size and weight limits for vehicles, consistent with applicable federal regulations.

Federal Vehicle Size and Weight Standards for Semi-Trailer Truck

Source: GAO Report 15-236
Why OS/OW Receive Limited Attention in Work Zone Planning

• FHWA Work Zone Safety and Mobility regulations (Rule) were enhanced in 2004 to address increased concern for safety and congestion for all highway users and workers on Federal-aid projects.

• Rule mandated states develop project transportation management plans (TMP’s) on Fed-Aid projects.

• Most State TMP procedures have focused emphasis on reducing traffic congestion, and improving worker and user safety.
Why OS/OW Topic is Relevant to Work Zone Designers

• Truck freight movement is vital to all state economies, including oversize and overweight (OS/OW).
• OS/OW freight movement is among the fastest growing segments in the truck freight industry, averaging 26 percent growth nationally in a recent 10 year span.
• Important to states to ensure OS/OW freight is not severely impacted during construction work zones.
State OS/OW Permits

• States have sole responsibility to issue OS/OW permits.
• OS/OW permitting processes are complex and every state has their own laws, regulations, and processes for requesting and issuing their permits.
• Permits are typically only for non-divisible loads.
Designers Need Basic Knowledge About Their OS/OW State Permit Rules and Procedures

- Importance of communication and coordination between infrastructure units and OS/OW permit issuing agency.
- Noteworthy practice is to document coordination procedures.
- Types of permits issued.
- Single trip versus Multiple trip permits.
- Notification requirements to permit holders.
How is OS/OW Freight Typically Dealt with in Work Zones?

• Rerouting or detouring OS/OW is often a good option for accommodation.
• But it may not always be physically possible or economically reasonable.
Communication & Coordination

• Develop partnership between Infrastructure Planning and Program Development units, and OS/OW Permits Issuing Agency.
• Identify OS/OW freight movement trade organizations and major OS/OW freight hauling companies.
Common OS/OW Freight

Construction Equipment and Manufactured Products

Source: GAO Report 15-236
Common OS/OW Loads

Agricultural Planting and Harvesting Equipment
Raw Forest Products

Source: TOPS Lab
Improvement Program Project
Development Planning & Scheduling

• Include OS/OW in improvement program development planning and scheduling along with all other user groups.

• Use long range planning products as starting points
  - State Freight plans
  - “Critical route pairs”
  - Preferred OS/OW route plans
Texas Primary and Alternate OS/OW Routes
Wisconsin Preferred Corridor Routes For Different OS/OW Freight

Source: WisDOT Facilities Development Manual

Source: Maine Department of Transportation | GAO-15-236
Project TMP Development

• Goal: no surprises during construction phase; eliminate or minimize need to issue change orders, this includes changes due to OS/OW.

• Include OS/OW freight consideration in TMP design checklists/project decision tree documents.

• Include OS/OW stakeholders in TMP development outreach, along with other stakeholders.

• Consider OS/OW when detour routes are evaluated.
Evaluate Alternate/Detour Routes

- What are existing size and weight restrictions?
- Are there overhead obstructions?
- Review intersection turning movement locations and identify possible lane off tracking restrictions at tight curves
- Are there existing movement of hazardous material restrictions?
- Are there emergency services response time issues?
- Any restrictions due to construction planned on the route?
- Are there other projects planning to use the same detour route?
Work zone Geometric Strategies-OS/OW Challenges & Opportunities

- One-Lane, Two-Way Traffic Control
- Intermittent or Short-term Closure
- Lane and/or Shoulder Closure
- Two-way Operation on One-side of a Divided Highway
- Shoulder as a Driving Lane
- Construct Temporary Bypass Lane(s) & bridges
Restrict/Mandate WZ or OS/OW Schedules - Pro’s & Con’s

• Night or Time of Day Operations
• Day of Week Operations
• Time of Year
Expedite Completion/Minimize Work Zone Impacts including OS/OW

- **Innovative Construction Methods**
  - Slide-In Bridge Construction
  - Precast Concrete Panel Pavement Systems

- **Construction Materials**
  - Concrete accelerators
  - Pre-cast, pre-stressed bridge components

- **Contract Strategies**
  - Trenchless technology
  - Mandated work schedules
Strategies for Accommodating Over-Width Vehicles

- Differential lane and shoulder widths
- Adjust lane widths with traffic control devices
- Moveable positive protection equipment

Source: Lindsay Corporation
Common Over-Width Vehicle Loads

Agricultural Planting & Harvesting Equipment

Differential lane widths and using available shoulder widths

Source: TOPS Lab
Inches Do Matter in Work Zones

Some State work zone design policies try to maintain sufficient dimensions to allow OS permitted loads to travel within projects limits.
Strategies for Accommodating Over-length Vehicles

- Evaluate tight curves and turning maneuver locations for off-tracking using design tools such as turning templates.
- Pave and/or widen shoulders at tight curves.
- Restripe lane widths and adjust stop bar locations at intersections.
- Eliminate parking/enlarge turning radii near intersections.
- Modify traffic control device supports to make them removable.
- Add special provisions to require contractor flagging or fund law enforcement to control traffic at times OS/OW are at the restricted location.
Evaluate Intersections and Tight Curves on Detours & In Work Zones

Source: Maine Department of Transportation. | GAO-15-236

Wind tower transporter
Accommodation Strategies for Overweight Vehicles

• Find an acceptable detour route.
• Coordinate with permit grant agency to require extra traffic control flagging on permit.
• Restrict only heavy loads on weight restricted detour or temporary bypass bridges so only heavy load on bridge at one time.
• Over design temporary structures.
Accommodation Strategies for Over-height Vehicles

- Increase specified bridge false work clearance.
- Evaluate alternative construction techniques.
- Use interchange ramps for over-height loads with regulatory signing.
  - Coordination and communication with permit agency and all stakeholders.
  - Include tell-tale height warning system in contract.
- Divert over-height loads into lanes with sufficient higher vertical clearance using permit requirement.
- Use temporary traffic signals on two way highways.
Contract provisions for Contractor/Project Staff Coordination with OS/OW Stakeholders

- Include non-typical work zone schedule notification requirements in project special provisions, i.e. different than standard specs.
  - Multiple-Trip OS/OW Routine Permits
  - Single-Trip Routine OS/OW Permits
  - Super-load and Mega-load Permits
- Include special provisions where contractor assistance is anticipated.
In Conclusion

• OS/OW stakeholders are important highway users and need TMP design consideration.
• Timely communication and coordination with state permit granting agency and OS/OW stakeholders throughout the TMP design process will go along way for implementing a successful project.